

## CLAIMS

What is claimed is:

1. A system facilitates identifying human interaction comprising:  
an access control component that controls access to one of a computer-based action and computer-based application; and  
an identification component that facilitates determining that access is initiated by a human, the identification component presenting an order-based problem to be solved before access is allowed.
2. The system of claim 1, the order-based problem comprising an arrangement of a plurality of objects whereby a user is asked to correctly identify at least a subset of the objects as well as to identify them in a particular order, the order being based at least in part upon a set of instructions provided to the user.
3. The system of claim 2, the objects comprising images, pictures, shapes, characters, and other visual elements which are identifiable by a human.
4. The system of claim 3, wherein any one of the images, pictures, shapes, characters, and other visual elements vary in at least one of size, dimension, color, and distortion.
5. The system of claim 1, the order-based problem being an order-based human interactive proof (HIP).
6. The system of claim 1, the order-based problem being a “start to end” HIP wherein a user is required to find a path of a consistent type and identify objects such as characters along the path.

7. The system of claim 6, wherein the path of a consistent type comprises a subset of objects which are connected by a consistent type of connector, the connector being selected from a group consisting of any one of arrows, lines, dotted lines, dashed lines, and shapes.

8. The system of claim 7, wherein at least a portion of the connectors are obscured by at least one of the following: at least one translucent shape and at least one opaque shape.

9. The system of claim 8, the at least one translucent shape obscuring larger portions of the connectors.

10. The system of claim 8, the at least one opaque shape obscuring smaller portions of the connectors.

11. The system of claim 7, the connectors being arrows whereby a user is required to identify a connected sequence of arrows, the arrows being of a same type, from a start position to an end position.

12. The system of claim 1, the order-based problem being a three-dimensional HIP wherein a user is required to find an ordering of objects in a three-dimensional image.

13. The system of claim 12, the ordering of objects being determined from at least one of a front-to-back viewing and a back-to-front viewing of the image.

14. The system of claim 12, the ordering of objects being determined from at least one of a left-to-right viewing and a right-to-left viewing of the image.

15. The system of claim 12, wherein the objects comprise any one of letters and numbers.

16. The system of claim 12, wherein the objects vary in size.
17. The system of claim 12, wherein the image comprises one or more depth clues, the clues comprising any one of shadows, reflections, fog, and partial occlusions.
18. The system of claim 17, the partial occlusions comprising at least a first object blocking at least a portion of a second object.
19. The system of claim 17, the shadows being produced by multiple light sources.
20. The system of claim 1, the order-based problem being a maze HIP wherein a user is required to maneuver an object through a maze configuration from a start position to an end position and to identify characters from a start position to an end position in the maze.
21. The system of claim 20, the object being a rectangular block.
22. The system of claim 20, the maze HIP configuration comprising a plurality of objects arranged in such a way as to provide a single path for the object to maneuver through a subset of the plurality of objects to reach the end position.
23. The system of claim 22, the plurality of objects comprising at least one of geometric shapes, rounded shapes, pointed shapes, angled shapes, and images of real objects.
24. The system of claim 23, wherein recognition of the images of real objects is required to determine the path for the odd-shaped object.

25. A method that facilitates identifying human interaction comprising:  
presenting an order-based HIP to a user desiring access to at least one of a HIP-controlled computer-based action and a HIP-controlled computer-based application;  
requesting the user to solve the order-based HIP to gain the access; and  
determining whether access should be given based at least in part on the user's response to the HIP.
26. The method of claim 25, solving the order-based HIP, comprising:  
viewing an image comprising a plurality of objects;  
identifying at least a subset of the objects, the subset of objects determined at least in part upon a set of given instructions; and  
ordering the at least a subset of the objects, the ordering determined at least in part upon the set of given instructions.
27. The method of claim 25, the objects comprising any one of the following:  
shapes, images, letters, and numbers.
28. The method of claim 25, at least a first subset of the objects being at least partially obscured by a second subset of objects.
29. The method of claim 25, at least a subset of the objects being distorted.
30. The method of claim 25, further comprising allowing access to at least one of the computer-based action and computer-based application when an acceptable answer to the HIP is given.

31. The method of claim 30, the acceptable answer being at least one of the following:

a correct answer; and

an answer consistently received from a percentage of users, whereby the percentage exceeds a minimum threshold.

32. An automatic verification system that facilitates rating human interactive proof (HIP) string difficulty comprising:

a HIP component that presents to a user at least two HIPs to solve, the at least two HIPs comprising at least one HIP of known difficulty and at least one HIP of unknown difficulty; and

a monitor component that monitors and analyzes user responses to the at least two HIPs to determine the difficulty of the HIP of unknown difficulty.

33. The system of claim 32, wherein the two HIPs are presented at approximately the same time.

34. The system of claim 32, wherein the two HIPs are presented consecutively at different times.

35. The system of claim 32, wherein the known difficulty refers to a percentage of users who have been able to provide consistent responses to the HIP, whereby the percentage exceeds a minimum threshold.

36. The system of claim 32, the at least two HIPs being presented in at least one of the same order and a random order to the user.

37. The system of claim 32, the two HIPs being generated by the HIP component based at least in part upon one or more parameters.

38. The system of claim 32, wherein users who provide acceptable answers to the HIP of known difficulty are presumed to be humans.

39. The system of claim 38, wherein acceptable answers comprise at least one of the following:

a correct answer; and

an answer consistently provided by a percentage of users, wherein the percentage exceeds a minimum threshold.

40. The system of claim 38, wherein the monitor component analyzes the user's response to the HIP of unknown difficulty when the user provides an acceptable answer to the HIP of known difficulty.

41. The system of claim 32, wherein the monitor component performs at least one of the following:

measures a percentage of users who answer the HIP of unknown difficulty correctly;

measures a percentage of users who provide similar responses to the HIP of unknown difficulty; and

measures a percentage of users who provide wrong answers to the HIP of unknown difficulty.

42. The system of claim 41, when the percentage of time the HIP of unknown difficulty is answered correctly exceeds a threshold, the difficulty of the HIP is determined to be suitable for humans to solve.

43. The system of claim 41, when the percentage of users who provide similar responses to the HIP of unknown difficulty exceeds a threshold, the difficulty of the HIP is determined to be suitable for humans to solve.

44. The system of claim 43, wherein the similar responses comprise at least one similar mistake.

45. The system of claim 41, wherein the monitor component discards the HIP when the percentage of users who provide wrong answers to the HIP of unknown difficulty exceeds a threshold.

46. The system of claim 32, wherein the monitor component analyzes and tracks a number of different correct answers for the HIP of unknown difficulty.

47. The system of claim 46, wherein the monitor component discards the HIP of unknown difficulty when the number of different correct answers exceeds a threshold.

48. The system of claim 32, the user being an IP address.

49. The system of claim 48, wherein the IP address is known to be operated by humans.

50. The system of claim 49, wherein knowing that the IP address is operated by humans is based at least upon the at least two HIPs being solved by the IP address.

51. The system of claim 49, wherein the HIP component randomly requests the IP address to answer at least one HIP of known difficulty to verify that the IP address continues to be operated by humans.

52. The system of claim 49, wherein the HIP component randomly requests the IP address to answer at least one HIP of unknown difficulty to facilitate determining the difficulty of the HIP in an automated fashion.

53. The system of claim 32, further comprising an access control component that controls access to at least one of a desired computer-based action and computer-based application and that grants access to the user for acceptable response to at least the first HIP of known difficulty.

54. The system of claim 32, further comprising a HIP parameter controller that controls a plurality of parameters which are at least partially utilized in generating HIPs.

55. The system of claim 54, the HIP parameter controller further modifying at least one parameter employed in the HIP of known difficulty to generate a new HIP of unknown difficulty to facilitate determining a difficulty rating of the at least one parameter in an automated fashion.

56. The system of claim 32, the HIP of known difficulty and the HIP of unknown difficulty being any one of an order-based HIP, a sequence-based HIP, and an audio HIP.

57. A method that facilitates determining a difficulty level of HIPs in an automated fashion comprising:

presenting at least two HIPs to a user desiring access to a protected resource to solve, the at least two HIPs comprising at least one HIP of known difficulty and at least one HIP of unknown difficulty;

monitoring the user's response to the at least one HIP of known difficulty;  
and

if the user's response to the HIP of known difficulty is acceptable, then subsequently monitoring the user's response to the at least one HIP of unknown difficulty to facilitate determining whether the HIP of unknown difficulty is suitable for humans to solve.



58. The method of claim 57, wherein an acceptable answer comprises at least one of the following:

- a correct answer; and
- an answer consistently provided by a percentage of users, wherein the percentage exceeds a minimum threshold.

59. The method of claim 57, wherein the protected resource comprises at least one of a computer-based action and a computer-based application.

60. The method of claim 57, wherein an acceptable answer to the HIP of known difficulty indicates that the user is a human.

61. The method of claim 57, wherein a percentage of acceptable answers to the HIP of unknown difficulty exceeds a threshold indicates that the HIP is solvable by humans.

62. A method that facilitates determining a difficulty level of HIPs in an automated fashion comprising:

- presenting at least one HIP of unknown difficulty to a trusted user desiring access to a protected resource to solve;
- monitoring the user's response to the at least one HIP to ascertain the difficulty level of the HIP; and
- allowing access to the protected resource regardless of the trusted user's response.

63. The method of claim 62, wherein the trusted user is known to be human.

64. The method of claim 62, further comprising periodically presenting at least one HIP of known difficulty to the trusted user to verify that the user continues to be human.

65. A data packet adapted to be transmitted between two or more computer processes facilitating identify human interaction, the data packet comprising:

information associated with presenting an order-based HIP to a user desiring access to at least one of a HIP-controlled computer-based action and a HIP-controlled computer-based application; requesting the user to solve the order-based HIP to gain the access; and determining whether access should be given based at least in part on the user's response to the HIP.

66. A data packet adapted to be transmitted between two or more computer processes facilitating identify human interaction, the data packet comprising:

information associated with presenting at least one HIP of unknown difficulty to a trusted user desiring access to a protected resource to solve; monitoring the user's response to the at least one HIP to ascertain the difficulty level of the HIP; and allowing access to the protected resource regardless of the trusted user's response.

67. A computer-readable medium having stored thereon the following computer executable components:

an access control component that controls access to one of a computer-based action and computer-based application; and

an identification component that facilitates determining that access is initiated by a human, the identification component presenting an order-based problem to be solved before access is allowed.

68. A system that facilitates identifying human interaction comprising:

- a means for presenting an order-based HIP to a user desiring access to at least one of a HIP-controlled computer-based action and a HIP-controlled computer-based application;
- a means for requesting the user to solve the order-based HIP to gain the access; and
- a means for determining whether access should be given based at least in part on the user's response to the HIP.

69. A system that facilitates determining a difficulty level of HIPs in an automated fashion comprising:

- a means for presenting at least two HIPs to a user desiring access to a protected resource to solve, the at least two HIPs comprising at least one HIP of known difficulty and at least one HIP of unknown difficulty;
- a means for monitoring the user's response to the at least one HIP of known difficulty; and
- if the user's response to the HIP of known difficulty is acceptable, then a means for monitoring the user's response to the at least one HIP of unknown difficulty to facilitate determining.

70. A system that facilitates determining a difficulty level of HIPs in an automated fashion comprising:

- a means for presenting at least one HIP of unknown difficulty to a trusted user desiring access to a protected resource to solve;
- a means for monitoring the user's response to the at least one HIP to ascertain the difficulty level of the HIP; and
- a means for allowing access to the protected resource regardless of the trusted user's response.